SNC4M

Unit on Pathogens and Disease

Culminating Activity

**Background**

Students would already have been given out and handed back research essays on a given disease that effected a significant population during a particular period in history. They are now expected to use that knowledge and research and further demonstrate their understanding of the material during this culminating activity that will take place over two successive course periods. Students would be told when they are given their essay research assignment about how important it would be and that their research and understanding would be required in the culminating activity. Students would be continually reminded of this importance.

**Course expectations**

A1.1 formulate relevant scientific questions about observed relationships, ideas, problems, or

issues, make informed predictions, and/or formulate educated hypotheses to focus inquiries

or research

A1.3 identify and locate a variety of print and electronic sources that enable them to address

research topics fully and appropriately

A1.9 analyse the information gathered from research sources for logic, accuracy, reliability,

adequacy, and bias

A1.10 draw conclusions based on inquiry results and research findings, and justify their conclusions

with reference to scientific knowledge

C1. evaluate the impact of scientific and technological knowledge and individual behaviour on

the control of pathogens and the prevention of disease;

C2. investigate the nature and growth of pathogens and the effectiveness of measures intended to

prevent their spread;

C3. demonstrate an understanding of pathogens, the diseases they cause, and ways of controlling

their spread.

C1.1 analyse, on the basis of research, the impact, both positive and negative, of scientific and

technological advances intended to prevent the spread of illness and disease [IP, PR, AI, C]

C1.2 evaluate the impact of individual choices (e.g., with respect to vaccination, the proper use

of antibiotics or mosquito repellent) on the control of pathogens and the prevention of disease

[AI, C]

C2.1 use appropriate terminology related to pathogens and diseases, including, but not

limited to: *parasite, epidemiology, pathogenesis,* and *vector* [C] C2.2 analyse, on the basis of inquiry, the effects of various treatments on pathogenesis (e.g., the effect of mouthwash or penicillin on the growth of bacteria) [PR, AI]

C2.4 use an inquiry process to demonstrate the effect of the use of sterile techniques (e.g., pasteurization, use of an autoclave) on pathogenesis [IP, PR]

C3.2 describe the mode of transmission of various diseases, including those that are insect-borne

(e.g., malaria, encephalitis), airborne (e.g., influenza, tuberculosis), water-borne (e.g., cholera,

poliomyelitis), sexually transmitted (e.g., HIV/AIDS), and food-borne (e.g., mad cow

disease, trichinosis, salmonella)

C3.4 describe the role of vaccines, antibiotics, antiretrovirals, and other drug therapies and

antiseptics in the control of pathogenesis

C3.5 describe non-medical ways to protect oneself from contracting pathogenic disease in a variety of situations (e.g., aseptic techniques such as wearing sterile gloves; proper personal hygiene such as frequent and thorough hand washing; the use of insect repellent)

C3.6 describe some of the means used by international non-governmental organizations

(e.g., Médecins sans Frontières, Oxfam, Ryan’s Well Foundation, UN agencies, the Stephen

Lewis Foundation) to control the spread of disease (e.g., distribution of vaccines, medication,

malaria nets; installing wells so people have access to clean water; public education

on strategies for transmission prevention)

C3.7 describe aseptic techniques used in the workplace, and explain their importance in

preventing the spread of pathogens (e.g., cooking meat to a safe temperature and refrigerating

leftovers quickly to avoid growth of bacteria in restaurant food; frequent hand sanitizing and

use of sterile gloves in hospitals to prevent the spread of pathogens to vulnerable populations)

**Accomodations**

ELL/ESL/LD Students may have been assisted more in their research essays and may be given fact sheets that they then need to decode and present in the activity. Students may be given extra time.

Gifted Students will appreciate the open concept framework and research driven component of this exercise and may thrive on the creative expression component

**SNC4M Pathogens and Disease**

**Culminating Activity**

**Time**: 2 class periods

**Instructions**

This activity is comprised of two parts. Part A involves answering several short answer questions and Part B involves a creative expression activity with some short answer questions.

In all questions in this culminating activity you are to answer them with the disease and time period from your independent research essay.

Please read over entire booklet before starting.

Please note how many marks each question is worth.

**Part A** (18 marks)

1. Explain the pathogenesis of your disease and why and in what conditions made it able to flourish during the time period it was most prevalent. Include how the pathogen traveled and spread and whom it chose to infect.(7 marks)
2. Will this disease ever have the same catastrophic effects on a population again? Why or Why not? What specific aseptic techniques and/or medical advances that we have now would prevent this mass recurrence? (4 marks)
3. What would you have done? Only using the tools and technology that were available during that time period explain what you could have done better to protect yourself and your family from the disease and if there was anything you could have done to help stop the further spread of this disease. You may put yourself in a position of power. List any assumptions you would first make.(4 marks)
4. Another outbreak! Describe what would have to happen for another outbreak of this disease to occur to have a similar impact to when it was at its height. (3 marks)

**Part B Public Awareness Campaign** (22 marks)

You have been hired by the government to create a public awareness campaign to help stop the spread of the disease. You need to help create an entire marketing campaign to achieve this. In order to maximize the effectiveness of this campaign you need to consider who you should be directing your advertisements towards and gear your campaign towards your critical target audience.

You must:

* Create a slogan. You need a catchy simple appeal to reach the most people. The simpler your message and the most direct, the more it will be remembered and applied.
* Consider your audience. Think about who your campaign should be directed to and relate to that group.
* Consider your medium. Decide how you would best reach your core audience (eg. radio, billboards, television, posters...). You do not need to limit yourself to just one medium. Most awareness campaigns have several outlets of expression.
* Use RAFT technique as described below

RAFT is a way of communicating by exploring what your role and purpose is of your piece. RAFT stands for:

R Role – Who are you? Are you a homeless person? A scientist? The prime minister?   
A Audience – Who specifically are you trying to reach? Professors? Health care?

F Format – What form will you be writing for? A radio ad? A poster? A letter in the newspaper?

T - Topic – What is the subject of your plea? Do you want to petition some activity? Do you want some tougher laws?

The point of RAFT is to ensure that you consider your message and how you are truly going to reach your target audience. Remember that for this activity you are not writing it as a student and you are not writing for a teacher – you are a campaign strategist and you are writing for a particular group of people that you are trying to stop from contracting and spreading a particular disease.

Your campaign will include:

1. A designed poster with your slogan on it ( a blank 8.5”x11” piece of paper is supplied for this) (6 marks)
2. A description of your awareness campaign including your choice of mediums and your target audience. (8 marks)
3. An explanation of your choices and how you plan to lower the incidence rate of this disease with your campaign. Why did you choose your specific target audience? How will your message lower the transmission rate? (8 marks)

**Assessment tools**

**Part A**

1.

K/U

Student must hit the following points for full marks:

Understanding mode of transportation of pathogen – 1point

Understanding how this affected spread – 1 point

Understanding lack of knowledge on aseptic techniques/ medical advances – 1 point

Understanding specific factors such as incubation period – 2 points

Description of the importance of these specific factors – 2 points

Total - /7

2.

A

Student recognizes that this could not happen again – 1 point

Proper and full description of all aseptic techniques/ medical advances that would prevent recurrence – 3 points

Missing one technique/advance or one incorrect technique advance – 2 points

Two omissions or mistakes – 1 point

Poor understanding of current protocols of prevention – 0 points

Total /4

3.

T/I

|  |  |  |  |
| --- | --- | --- | --- |
| Level 4 | Level 3 | Level 2 | Level 1 |
| Student shows high degree of understanding and thorough application of techniques of treatment, prevention and isolation | Student shows considerable degree of understanding and application of techniques of treatment, prevention and isolation | Student shows some degree of understanding and application of techniques of treatment, prevention and isolation | Student shows limited degree of understanding and application of techniques of treatment, prevention and isolation |

/ 4 marks

4.

C

|  |  |  |
| --- | --- | --- |
| Level 3 | Level 2 | Level 1 |
| Student demonstrates a thorough understanding of parameters to change to incur another outbreak | Student demonstrates considerable understanding of parameters to change to incur another outbreak | Student demonstrates some understanding of parameters to change to incur another outbreak |

/3 marks

Total Part A /18

Part B

1. C

|  |  |  |  |
| --- | --- | --- | --- |
|  | Level 3 | Level 2 | Level 1 |
| Presentation | Poster has high degree of attractiveness, neatness and impact | Poster has considerable degree of attractiveness, neatness and impact | Poster has some degree of attractiveness, neatness and impact |
| Effectiveness of message | Poster has excellent slogan with concise, accurate information which would create maximum effectiveness | Poster has very good slogan with correct information which would create considerable effectiveness | Poster has a satisfactory slogan with information which would create some effectiveness |

/ 6 marks

2.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Communication* | Level 4 | Level 3 | Level 2 | Level 1 |
| Style | Description has excellent detail and is described thoroughly and with elegant flow | Description has considerable detail and is described well and with very good flow | Description has some detail and is described satisfactorily and with some possibly clumsy flow | Description has poor detail and is not described well and with little flow |
| *Thinking/Inquiry* |  |  |  |  |
| Choice of medium used and target audience appealed to | Choices show thorough understanding of a proper campaign | Choices show considerable understanding of a proper campaign | Choices show some understanding of a proper campaign | Choices show limited understanding of a proper campaign |

/ 8 marks

3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Communication* | Level 4 | Level 3 | Level 2 | Level 1 |
| Application of RAFT technique | Student thoroughly understands RAFT and adapts campaign with all considerations | Student thoroughly understands RAFT and adapts campaign with all considerations | Student thoroughly understands RAFT and adapts campaign with all considerations | Student thoroughly understands RAFT and adapts campaign with all considerations |
| *Thinking/ Inquiry* |  |  |  |  |
| Logic/Effectiveness | Student shows thorough logical processes and demonstrates exceptional effectiveness in awareness campaign | Student shows considerable logical processes and demonstrates considerable effectiveness in awareness campaign | Student shows some logical processes and demonstrates some effectiveness in awareness campaign | Student shows limited logical processes and demonstrates limited effectiveness in awareness campaign |

/8 marks

Part B /22 marks

Total /40 marks